

Serial No. 10/063,962
Docket No. 13DV-13657

Amendments to the Specification:

Please amend the specification by inserting the "replacement" paragraph(s) set forth below, marked up to show the changes made relative to the immediately prior version of the indicated paragraph(s).¹

a/

[0006] Commonly-assigned U.S. Patent ~~Application~~ Serial No. 6,586,115 ~~09/833,446~~ to Rigney et al. discloses a TBC of zirconia partially stabilized with yttria, preferably not more than three weight percent yttria (3%YSZ), to which one or more additional metal oxides having an ion size difference relative to zirconium ions (Zr^{4+}) are alloyed to reduce the thermal conductivity of the TBC. The additional metal oxides are disclosed to be limited to the alkaline-earth metal oxides magnesia (MgO), calcia (CaO), strontia (SrO) and barium oxide (BaO), the rare-earth metal oxides lanthana (La_2O_3), ceria (CeO_2), neodymia (Nd_2O_3), gadolinium oxide (Gd_2O_3) and dysprosia (Dy_2O_3), as well as such metal oxides as nickel oxide (NiO), ferric oxide (Fe_2O_3), cobaltous oxide (CoO), and scandium oxide (Sc_2O_3). Rigney et al. teaches that the required degree of crystallographic defects and/or lattice strain excludes such oxides as hafnia (HfO_2), titania (TiO_2), tantala

¹ Strikethroughs indicate deletions and underlining indicates insertions.

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a1 (Ta₂O₅), niobia (Nb₂O₅), erbia (Er₂O₃) and ytterbia (Yb₂O₃), as well as others.

a2 [0009] A significant advantage of the present invention is that, by improving the impact resistance, the coating is capable of greater reliability, especially on the leading edge of a turbine airfoil. The greatest benefit appears to be with limited additions of lanthana, neodymia and/or tantalum, preferably in amounts of up to about five weight percent for lanthana and neodymia and up to about ten weight percent for tantalum. Coatings of this invention also exhibit desirable thermal cycle fatigue lives and thermal conductivities. It should be noted that while U.S. Patent Application Serial No. 6,586,115 ~~09/833,446~~ to Rigney et al. discloses a YSZ TBC containing lanthana, neodymia or another oxide, the purpose is to reduce thermal conductivity. Furthermore, Rigney et al. teach that the amount of lanthana or neodymia added to the YSZ composition is based on the ability to create crystallographic defects and/or lattice strain with the TBC. To have this effect, Rigney et al. require lanthana and neodymia in amounts of at least 5.8 and 5.7 weight percent, respectively, which are higher than what has been determined by this invention to have a significant effect on impact resistance.
